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# StateIMS User Manual

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This document provides information about using StateIMS – Colorado’s Decision Support Systems (CDSS) Internet Map Server. StateIMS provides spatial data viewing and querying facilities for CDSS spatial data. This manual assumes familiarity with basic Web browsing terminology and operation.

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## 1. Introduction

### 1.1 General

StateIMS provides a Web-based display and querying capabilities of CDSS spatial data. It is accessed from the main CDSS web site. StateIMS was tested with Internet Explorer but can also be used with Netscape and other browsers. If your browser has a pop-up blocker, you will need to turn it off to use all of the application features.

### 1.2 Data

CDSS spatial data are organized in StateIMS in layers and related layers are grouped in a tree-like menu. Some layers are visible only within certain scale limits. Also, the labels of some layers are visible only within certain scale limits. The following table lists in alphabetical order the groups and layers available in StateIMS. The table also includes the scale limits set on the display of layers and labels.

**Available Layers and Scale Limits**

Group	Layer	Scale Limit (Denominator)			
		Layer Visibility		Labels Visibility	
		Lower	Upper	Lower	Upper
Base	Cities				
	Counties				
	Divisions				
	Elevation				
	River Basins				
	Highways				
	Satellite Image				
	Sections		400,000		
	Shaded Relief				
	Topography (DRG)				
	1:24,000		24,000		
	1:100,000	24,000	100,000		
	1:250,000	100,000	250,000		
	Townships				500,000
	Water Districts				
Climate	Evaporation Stations				
	Precipitation Stations				
	Solar Radiation				
	Temperature Stations				
Groundwater	Alluvial Aquifer				

Group	Layer	Scale Limit (Denominator)			
		Layer Visibility		Labels Visibility	
		Lower	Upper	Lower	Upper
	Bedrock Aquifer				
	Decreed Wells			10	100,000
	Designated Basins Aquifer				
Land Use	1998 Division 3 Irrigated Lands				
	1993 West Slope Irrigated Lands				
	2000 West Slope Irrigated Lands				
	Land Cover (NLCD)		1,000,000		
Diversions	Diversions				200,000
	Transbasin Structures				
Surface Water	Lakes and Reservoirs (areas)				
	Main Rivers				
	Reservoirs (points)				200,000
	Rivers		1,000,000		
	Stream Gages				400,000
	Stream with Instream Flow Right				

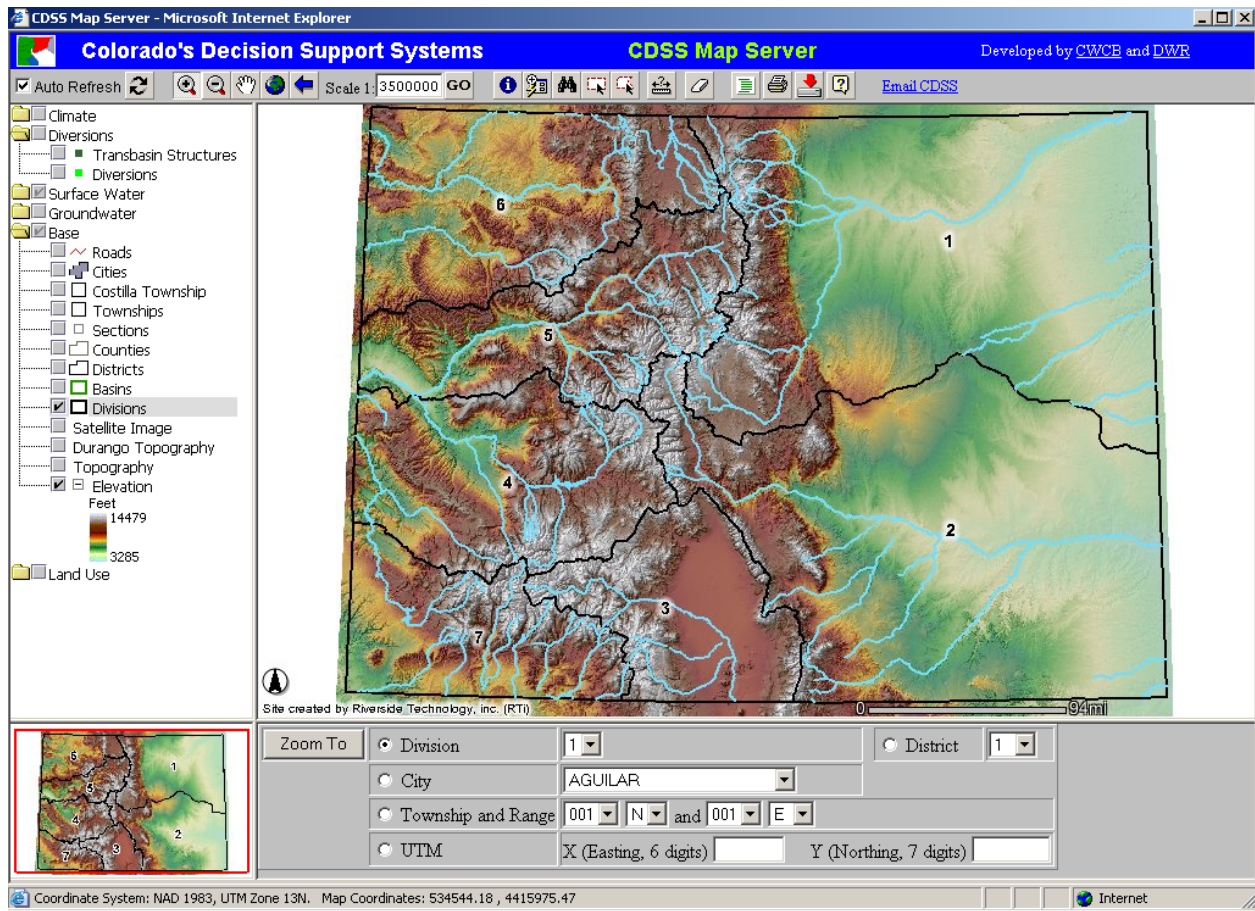
### 1.3 Features

The main features of StateIMS include:

- The map can be navigated by zooming, panning, and through the overview map.
- Layers can be navigated using a tree menu and can be turned on and off.
- Metadata can be displayed for the data sources.
- Features can be selected graphically on the map or searched by attributes.
- Attributes of selected features can be viewed in tabular format. The table for some of the CDSS layers includes a link to additional information about the selected feature.
- A link is provided for downloading CDSS data.

## 2. Interface

Use a web browser to navigate the CDSS web site to the link for StateIMS. Clicking this link opens StateIMS in a new, maximized browser window.



As seen in the above figure, the application interface consists of six distinct areas.

- [Title](#)
- [Toolbar](#)
- [Layer List](#)
- [Main Map](#)
- [Overview Map](#)
- [Data Panel](#)

The top of the application window contains the application title and the toolbar. The toolbar consists of a series of buttons and other controls to allow the user to interact with the application.

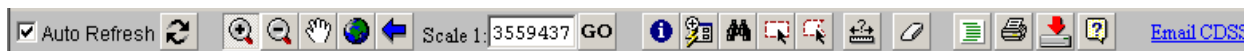
Along the left side of the application window is the layer list, laid out in a tree structure. The layer list provides an interface to display and select available data layers. Below the layer list is a small windowpane that provides an overview map. The center of the application contains the main map, where most of the user interaction occurs. The frame below the main map is used to display dialog forms, attribute information for selected features, and messages. Each of the six interface components is described in more detail in the subsections that follow.

## 2.1 Title



The title area includes, in addition to the title text, a CDSS graphic on the left side. Clicking this image opens the CDSS home page in a new browser window. In addition, two links on the right side of the title open the home pages of the Colorado Water Conservation Board (CWCB) and the Colorado Division of Water Resources (DWR).












## 2.2 Toolbar



The toolbar contains buttons and other controls that allow the user to perform various operations and interact with the map. When the mouse cursor is held over a button, a tool tip shows the name of the button and the status bar of the browser window shows a short description of the button.

The following table provides a short description of each of the toolbar controls. More information about using the tools is provided in the **Common Operations** section (Section 3).

Image	Name	Description
	<b><i>Auto Refresh</i></b>	When checked, the map will automatically refresh after toggling the visibility of each layer. See Section 3.1.
	<b><i>Refresh</i></b>	Force the map to redraw. See Section 3.1.
	<b><i>Zoom In</i></b>	Zoom in to an area on the map. See Section 3.2.
	<b><i>Zoom Out</i></b>	Zoom out from an area on the map. See Section 3.2.
	<b><i>Pan</i></b>	Pan the map by dragging it in any direction. See Section 3.2.
	<b><i>Full Extent</i></b>	Zoom to the full extent of the data.
	<b><i>Last Extent</i></b>	Zoom to the previous extent of the map.
	<b><i>Scale Text</i></b>	Scale denominator of the map. See Section 3.3.
	<b><i>Zoom to Scale</i></b>	Zoom to the specified scale. See Section 3.3.

Image	Name	Description
	<b><i>Identify</i></b>	Show the attribute data of a feature clicked on the map. See Section 3.4.
	<b><i>Quick Zoom</i></b>	Select and Zoom to a feature or coordinates. See Section 3.5.
	<b><i>Find</i></b>	Select by attribute feature(s) of the active layer. See Section 3.6.
	<b><i>Select by Rectangle</i></b>	Select features on the map by drawing a rectangle around or through them. See Section 3.7.
	<b><i>Select by Shape</i></b>	Select features on the map by drawing a line or a polygon around or through them. See Section 3.7.
	<b><i>Measure</i></b>	Set measure units and measure distances on the map. See Section 3.9.
	<b><i>Erase</i></b>	Clear the map from selections and measure line segments.
	<b><i>Metadata</i></b>	Display metadata for the active layer. See Section 3.10.
	<b><i>Print</i></b>	Print a layout of the current map. See Section 3.11.
	<b><i>Download</i></b>	Open the CDSS GIS data download page. See Section 3.12.
	<b><i>Help</i></b>	Open a user manual.

The toolbar also contains an *Email CDSS* link that opens a new message form to contact the StateIMS administrator with feedback, comments, bug reports, questions about using the application, and suggestions.

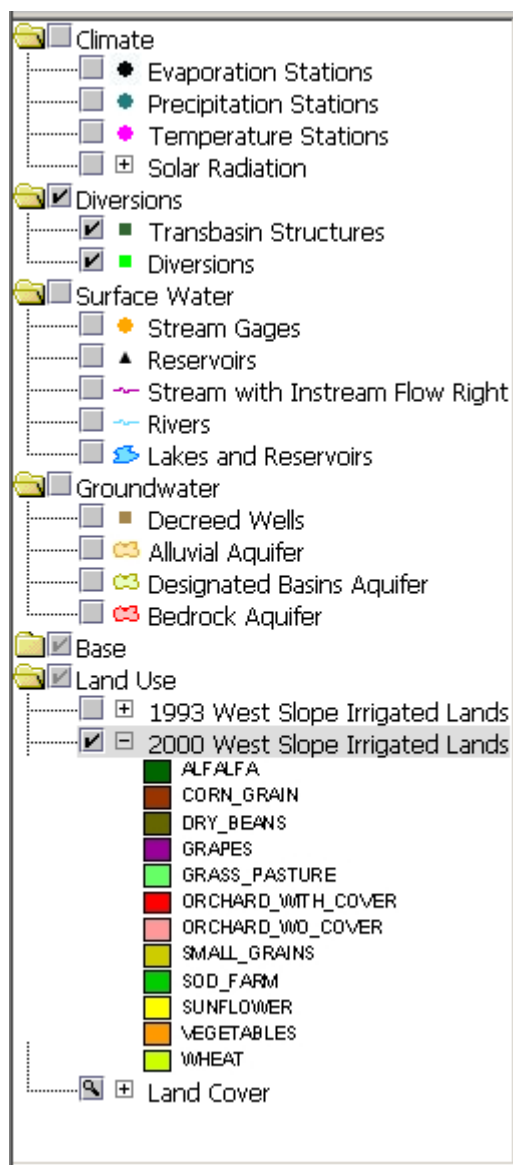
## 2.3 Layer List

The layer list along the left side of the application window displays a tree-like structure used to navigate the data layers. The figure on the right shows a sample view of the layer list. The layers are grouped by subject. Available groups and the layers each group are listed in **Section 1.2**.

Each group has a folder icon with two states: open and closed. Clicking the group folder or group name toggles between the two states. When the folder is closed the list of its layers is collapsed. For example, in the graphic, the Base group is closed and the other groups are open.

The layer list supports data visibility at both the layer and group levels. Clicking the check box next to each group is used to turn on and off the visibility of all the layers in the group. A grayed-out check mark next to a group folder indicates that one or more but not all the layers in the group are drawn on the map. In the sample graphic, the Base and Land Use groups have at least one layer visible but not all, the Diversions group have all of its layers visible and none of the layers of the other groups is visible.

Some layers have scale limits on their visibility. Layers that have been flagged visible but are not visible at the current zoom level are indicated by a magnifying glass icon instead of a check mark. Pointing at this icon with the mouse shows the scale limits in the status bar. In the sample graphic, the Land Cover layer is not visible at the current map scale.



When a layer has a single symbol, the symbol is displayed to the left of the layer name. When the layer has multiple symbols, it has plus or minus icon to the left of the name. Clicking this icon toggles the visibility of the symbols.

Many of the operations in StateIMS such as identifying and selecting features operate on the active layer. The active layer is indicated by a gray background in the layer list. In the figure above the *2000 West Slope Irrigated Lands* is the active layer. One and only one layer is active at any time. A layer can be made activate by clicking its name in the layer list, which automatically deactivates the previously active layer.

The order of the layers in the layer list is the order in which they are drawn on the map. The layers at the top of the list draw on top of those below them. You may need to turn off the visibility of some layers to be able to see the layers below them.

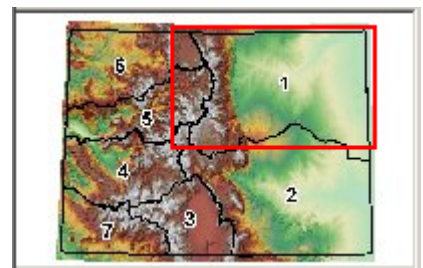
The frame of the layer list can be resized by dragging its right border with the mouse. For example, the layer list can be widened to show the full name of the layers without the need to scroll to the right.

## 2.4 Main Map

The main map is located to the right of the layer list. It shows the visible layers. The order in which the layers are drawn is from the bottom of the layer list to the top. The map also includes a North arrow in the lower-left corner and a scale bar in the lower-right corner. The map can be resized by dragging its bottom and left borders with the mouse.

## 2.5 Overview Map

The overview map is located below the layer list. It shows the full extent of the state at all times. A red rectangle on the overview map indicates the visible extent on the main map. When the main map is zoomed in, clicking the overview map shifts the main map to center on the clicked location at the zoomed in scale.



## 2.6 Data Panel

The area below the main map is used in conjunction with various tools to display attribute data for selected map features, to display forms that prompt the user for input, and to output messages to the user. This area can be resized, e.g., to display more records of selected features.




### 3. Common Operations

This section provides step-by-step instructions for performing common operations with StateIMS.




#### 3.1 Display Layers

The visibility of layers can be changed both at the layer level and the group level in the layer list. Toggle the visibility of all layers in a group by clicking the check box next to the group name. Toggle the visibility of a single layer by clicking the check box next to the layer name.

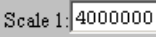

Changing the visibility of layers when **Auto Refresh** is checked will refresh the map automatically after changing the visibility of each layer or each group. This could take a long time when changing the visibility of several layers. To improve performance, it is recommended to uncheck **Auto Refresh** before changing the visibility of several layers and then click the **Refresh** button  to commit all the changes at once.

Some layers have scale limits on their visibility. When making a scale-sensitive layer visible and the scale is not within the limits, the visibility check box will display a magnifying glass instead of a check mark. Pointing at the magnifying glass with the mouse cursor will display the scale limit(s) in the status bar. Once the map is within the layer scale limits, the layer will become visible.

#### 3.2 Zooming and Panning the Map


- Zoom in or out
  1. Click the Zoom In button  or Zoom Out button  on the toolbar.
  2. Move the mouse pointer over the map display and click once to zoom by a scale ratio of 2 around a point. Alternatively, click and drag a rectangle defining the area you want to zoom in or out on.
- Pan
  1. Click the Pan button  on the toolbar.
  2. Move the mouse pointer over the map display and click and drag the pointer.

#### 3.3 Zoom to Scale

To zoom to a specific scale, type the desired scale denominator in the **Scale** box  on the toolbar and press the **Enter** key or click the **Zoom to Scale** button . The map will zoom to the specified scale. This value is not perfectly accurate due to difference in monitor displays. The **Scale** box accepts values from 1 to 9999999.


### 3.4 View Feature Data

To view the attribute data of a feature that you see on the map:

1. If the feature layer is not active, click the layer name in the layer list to make it active.
2. Click the **Identify**  button.
3. Point to a feature on the map and click.
4. The feature attribute data is displayed in the data panel, below the map.


### 3.5 Zoom to Location

To quickly zoom the map to a specified location:

1. Click the **Quick Zoom** button . A form is displayed in the data panel.
2. Use the dropdown lists in the form to select a division, water district, city, township, or enter UTM coordinates.
3. Click the **Zoom To** button on the form.
4. The map will zoom to the specified location. If zooming to a location other than UTM coordinates, the attribute data of the selected feature will be displayed in the data panel.



### 3.6 Find Features by Attribute

To find features by an identifying attribute such as name:

1. Activate the layer of the feature to find.
2. Click the **Find** button . A form is displayed in the data panel.
3. For most layers, the form will provide a dropdown list of all unique values of the attribute to select from. Some layers have thousands of records in the attribute table and retrieving the list of all values could take a long time. In this case, the form provides a text box to type in the value. Alternatively, clicking the **Get Samples** button on the form will replace the text box with a list of the top 1500 unique values in the attribute table.
4. Select or type the value to find.
5. Click the **Find** button on the form.
6. The attributes of the selected feature(s) will be displayed in the data panel and the feature(s) will be highlighted on the map.
7. To zoom to all the selected features, click the Zoom to Feature(s) link at the top of the results tables. To zoom to a single feature, click the hyperlinked number in the **Rec** field, which is the leftmost field.

### 3.7 Select Features by Graphic

You can select features on the map by drawing a line, a rectangle, or a polygon that encloses or intersects the feature. Selecting the features will display their attributes and highlight them on the map.

1. Make sure that the layer in which you want to select features is active.
2. Click the **Select by Rectangle**  or **Select by Shape**  button.
3. When selecting by rectangle:
  - a. Click a point on the map and while holding the mouse button down, drag a rectangle that encloses or contacts the features to select.
  - b. Release the mouse button. The features are selected, their attributes are displayed in the data panel, and they are highlighted on the map.
4. When selecting by shape:
  - a. Click a point on the map, move the mouse to another point and click again to draw a line that intersects or encloses the features to select. Use the form in the data panel to restart the selection process by clearing the drawn line, to undo the last clicked point, or to complete the selection.
  - b. The selected features are highlighted on the map and their attributes are displayed in the data panel.

### 3.8 View More Information About a Feature

Once features are selected and their attributes are displayed in the data panel, look in the table for a hyperlink field. It should be available for most CDSS-specific point data. If available, click the link in a feature's record to view additional information about that feature (e.g., flow rate time series data). The following figure shows an example of a hyperlink field and the link for more information on the Olive Spring diversion is circled in red.


Diversions

[Zoom to Feature\(s\)](#)

Rec	HTMLLINK	WD	ID	NAME	DCRCAP	DCRUNIT	CIU	DIV	COUNTY	ST	WATER_SRC	UTM_X	UTM_Y	LATDECDEG	LONGDE
1	<a href="#">more info</a>	55	503	ESCALANTA PUMP 1	-999		A	6	MOFFAT	CO	LITTLE SNAKE RIVER	221018.4	4502725.4	40.628275	-108.298
2	<a href="#">more info</a>	55	513	VISINTAINER DITCH	12.6	CFS	A	6	MOFFAT	CO	LITTLE SNAKE RIVER	225305.4	4506854.5	40.666848	-108.249
3	<a href="#">more info</a>	55	1062	OLIVE SPRING	0.005	CFS	U	6	MOFFAT	CO	TRIBUTARIES-SNAKE R.	231727.6	4510051	40.697713	-108.175


This feature is still under development and the CDSS web site is being enhanced to better support it.

### 3.9 Measure Distance


To measure distances on the map click the **Measure** button . This will activate the measure tool and display a dialog for setting the measure units in the data panel. The default measure units are miles. To display the measured distance in different units use the **Display Units**

dropdown list of in the **Set Units** form to select Feet, Meters, or Kilometers and click the **Set Units** button.

Click the starting point on the map. Click to add a second point, creating a line segment along which you want to measure the distance. Click to add additional line segments as needed. As you move the mouse away from the last point, the segment length changes in the **Segment** text box. The total distance of all of the line segments appears in the **Total** text box at the upper-left corner of the main map.


To clear the lines from the map click the **Clear** button  on the toolbar.

### 3.10 View Metadata


To view the metadata for a layer, click the layer name to activate it and then click the **Metadata**  button on the toolbar. The metadata for the active layer will be displayed in a new browser window.

### 3.11 Print Map

To print a simple layout of the current map:

1. Click the **Print** button  on the toolbar.
2. Print options appear in the data panel below the map.
3. Type a title for the printed map.
4. Click the **Create Print Page** button on the form.
5. A new browser window opens containing a printable version of the map for the selected extent with a title, legend, overview map, scale bar, and North arrow.
6. Select **Print** from the browser's **File** menu.
7. The **Print** dialog box appears.
8. Make any necessary changes to the print settings.
9. Click OK. The map is sent to the printer.

### 3.12 Download Data

Several feature layers are available for download as shapefiles from the CDSS Web site. Click the **Download Data** button  to open the CDSS download page in a new browser window.

### 3.13 Contact StateIMS Administrator

To provide feedback, comments, bug reports, or request information on StateIMS, click the Email CDSS link on the toolbar. This should open a new message form with the address and subject. If not, the email address is displayed in the status bar when the mouse cursor is over the link.

## 4. Troubleshooting

This section discusses how to troubleshoot problems with StateIMS.

Problem	Possible Solution
The application doesn't behave as expected	<p>Delete temporary files:</p> <ol style="list-style-type: none"><li>1. In Internet explorer open the <b>Tools</b> menu.</li><li>2. Select <b>Internet Options</b>.</li><li>3. In the <b>General</b> tab, under the <b>Temporary Internet Files</b> section, click the <b>Delete Files...</b> button.</li><li>4. In the Delete Files dialog, check the <b>Delete all offline contents</b> check box.</li><li>5. Click the <b>OK</b> button.</li></ol>
When printing a map, a new browser window with the printable map page does not open.	Disable pop-up blocking in your browser.
The browser progress bar unexpectedly starts to move.	Ignore the progress bar. This is an ESRI bug. The bug ID is CQ00275129.
The map does not refresh after resizing it.	If you are using Netscape, this feature is not supported. Refresh the map manually by clicking the <b>Refresh</b> button.

## 5. Glossary

### **active layer**

A setting in the layer list that determines the layer in which features are queried or selected. You must set the active layer whenever you are using spatial querying or selection tools or the ***Find*** tool. The active layer is set by clicking a layer name in the layer list. For instance, if you want to identify a well, you must set the active layer to Decreed Wells. One and only one layer is active at any time.

### **attribute**

1. A piece of information describing a map feature. The attributes of a diversion, for example, might include its name, and its water source.
2. A column in a table.

### **extent**

The coordinates defining the bounding rectangle (xmin, ymin and xmax, ymax) of the data.

### **feature**

A representation of a real-world object as a point, line, or polygon.

### **label**

Text derived from feature attributes that is dynamically placed on the map to help identify features.

### **layer**

A collection of similar geographic features—such as rivers, lakes, counties, or cities—in a particular area or place referenced together for display on a map. A layer references geographic data stored in a data source, such as a shapefile, and defines how to display it.

### **metadata**

Information describing a collection of data. Metadata about spatial data may include the source of the data, its creation date and format, its projection, scale, resolution, and accuracy, and its reliability with regard to some standard.

### **pan**

To move the viewing window up, down, or sideways to display areas in a map that, at the current viewing scale, lay outside the viewing window.

### **scale**

The relationship between the dimensions of features on a map and the geographic objects they represent on the earth, expressed as a ratio. A map scale of 1:100,000 means that one unit of measure on the map equals 100,000 of the same unit on the earth.

**UTM**

Universal Transverse Mercator. A projected coordinate system that divides the world into 60 north and south zones, six degrees wide. StateIMS data is in UTM Zone 13 North coordinate system.